



Energy Smart Services

solutions &
incentives for
business

SECTION 5

PLUG LOAD SERVICES



- **Plug loads**, those items that are not hard wired to the building but plugged into electrical outlets, have been the fastest growing end use in the commercial sector, and their growth has caught the attention of energy management professionals.
- The computers, printers, copiers and other pieces of equipment in an office frequently have features allowing them to be shut down or put to sleep, but for a variety of reasons these are not often enabled. Products without these features can often be fitted with software or external devices to do the same thing, but these are even less common.
- Seattle City Light encourages those who purchase or lease equipment to pay attention to the energy efficiency of that equipment, and enable sleep and shut-down modes whenever possible. Overcoming technical and performance issues, and providing education on the value of these features will be required for their wider adoption and use.
- In conjunction with the Bonneville Power Administration, City Light provides free external devices that shut down compressors in cold drink vending machines during times of little use. This section provides more detail on this particular device and other strategies customers can use to bring plug load energy consumption under control.
- By monitoring the effectiveness of these technologies, Seattle City Light hopes to be able to provide more support for this important and growing sector.

Section 5. Plug Load Services

- What are Plug Loads?
- Plug Load Management Recommendations

Plug Load Services

WHAT ARE PLUG LOADS?

Plug loads include those devices in a building that are not hard-wired to the electrical system. The most common plug loads in business settings include computers, monitors, printers, copy machines, fax machines, and task lights. Other plug loads frequently encountered are food and drink vending machines, office refrigerators, microwave ovens, coffee makers, etc. Not surprisingly, plug loads have been the largest growing end-use in the commercial sector in the last 20 years and can represent as much as a quarter of the total electricity use in office buildings.

The goal of City Light's plug load initiative under Energy Smart Services is to promote the efficient use of office equipment both through purchasing and management strategies, control devices, and behavioral changes.

PLUG LOAD MANAGEMENT RECOMMENDATIONS

1. Turn It Off When Not Needed

Too often office equipment is left on at night, during weekends, holidays and vacations when users are away. Turning equipment off at these times can save over 80% of the energy use. However, since human behavior is rarely consistent, there are a number of "automated" options to achieve similar results described below.

2. Buy and Use Energy Star™ Equipment

All offices should have a purchasing policy that specifies Energy Star™ equipment. Energy Star™ devices meet Environmental Protection Agency energy efficiency requirements. Energy Star™ office equipment saves energy by powering down and "going to sleep" after a significant lapse in usage, making it easy for businesses to save money with little impact on worker productivity. According to the EPA, the typical American business with 100 computers, 10 laser printers, and 3 copiers spends more than \$4,700 each year to power its equipment. If the equipment were Energy Star™ labeled with the power-down features enabled, energy use would be cut in half. The EPA Energy Star™ Web site, at www.energystar.gov, provides additional information on the savings for specific types of office equipment and a list of Energy Star™ equipment by manufacturer and model. Summaries of some office equipment savings are provided below.

Personal Computers. A standard desktop personal computer (PC) with a central processing unit and monitor draws approximately 120 watts at rest, with the CRT monitor using the majority of the power at 90 watts. Contrary to popular belief, screen savers do not save any power. Besides turning the monitor off, the only way to reduce energy use by a monitor is to engage the "sleep" mode on Energy Star™ computers. The monitor uses approximately 10 watts in sleep mode, versus 90 watts in standby. The monitors can also be programmed to turn off completely after a specified time delay. According to the the Environmental Protection Agency, a typically

equipped 30 story building can save about \$12,000 per year if the automatic sleep mode is enabled for all computer monitors.

The Energy Star™ features of many computers are disabled upon delivery so the user must check their “desktop” to ensure that they are turned back on. The user can program the length of the time delays before sleeping.

Printers. Printer electricity use can be substantial, even in standby mode. Impact (dot matrix) and inkjet printers are relatively energy efficient, using less than 20 watts in standby mode. However, laser printers typically use over 100 watts in standby. Purchasing Energy Star™ labeled printers can cut electricity use by over 65%. Turning printers off at night and on weekends provides significant savings.

Once again, there are Energy Star™ printers available that can power down to 15–45 watts after a specified period of inactivity. The program feature must be activated, and printer supplier or IT support may be able to help with this feature. There are also off-the-shelf devices that can automatically turn off printers after a period of inactivity.

Copiers. Copiers are the most energy-intensive piece of office equipment, and vary in their energy use in standby mode. Smaller tabletop copiers use close to 60 watts in standby, and 250 watts peak during copying activity. The floor model copiers can use close to 200 watts in standby mode since they must maintain the toner at a near-ready temperature for fusing. Night time and weekend shutoff provides significant energy savings.

Energy Star™ models are available which turn the copiers to low-power mode after 15 minutes of inactivity, and to an off-mode of 5–20 watts after 120 minutes of inactivity. This helps to maximize energy savings during evenings and weekend. Energy Star™ copiers can reduce annual energy cost by over 60%. Since most copiers are leased equipment, the leasing company should be able to assist with programming the Energy Star™ features.

Consider also a high-speed copier that includes a duplexing unit set to automatically make double-sided copies. These can reduce paper costs substantially, and since it takes ten times more energy to manufacture a piece of paper than to copy an image on it, overall energy savings are realized as well.

3. Buy Controllers for Older Equipment

Energy Star™ sleep-mode features are not available on older equipment, and sometimes can't be enabled on newer computer models because of software and network incompatibilities. Alternatives in these cases are activity-based power management devices that connect to the equipment. Examples include: LaserMiser™ which turns off laser printers when not in use, MonitorMiser™ which plugs into the keyboard and turns off the monitor when not in use, and occupancy sensor power strips such as Wattstopper™ and Office Miser™.

4. Get a VendingMiser™ for Cold Drink Machines

Vending machines use electricity 24 hours a day, nights, weekends, and holidays. The VendingMiser™ controller reduces the energy consumption of cold drink vending machines by



using an occupancy sensor to power down the lights and compressor without short-cycling the compressor or letting the pop get too warm. VendingMiserTM savings average 35%–40% and this translates into a reduction of \$55 to \$130 in the annual electricity bill for each machine.

City Light offers **free** installation of VendingMisersTM for all qualifying cold drink machines. To arrange for VendingMiserTM installation on a cold drink vending machine, contact Bayview Technologies toll-free at **(866) 279-9800**. For more information on VendingMiserTM, see Seattle City Light's Web site, at www.EnergySmartServices.com.